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is not entirely fanciful. The molecular changes that age works in the nature of the wood they are made of have an important influence over their sounding qualities. The very act of playing has a beneficial effect; apparently constraining the molecules of the wood, which in the first instance were refractory, to conform at last to the requirements of the vibrating strings.

When a string, or a column of air in a pipe, is put in vibration, it not only vibrates as a whole, but it subdivides itself into proportional parts, each of which has its own time of vibration, and gives forth its own sound. These supplementary sounds are called harmonies; and it is the mingling of these with the fundamental note produced by the vibration of the whole string or air-column that determines the quality of the emitted tones, or what we, following the French, call *timbre*. A violin and a clarinet may give forth the same note; yet their sounds will be quite different in tone, because the auxiliary vibrations accompanying the fundamental note in each are different. The Germans call this property *klangfarbe*, literally *sound-color*. Professor Tyndall suggests that we should have an English name for it in lieu of the French word; he proposes *clang-tint* as the most expressive term, and uses it in his lectures.

Vibrations imparted to the air are frequently taken up by solid bodies at a distance. When music is being played, it is not uncommon to hear the lamp-glasses or other-sounding bodies in the room join in the concert. In those cases the glass picks out from the general clamor that particular set of vibrations which it is capable of taking up, and rings in harmony with the note producing them whenever that note is sounded. A sounding tuning-fork will thus excite a silent one to play with it. Two pendulum-clocks fixed to the same wall, or two watches lying on the same table, will take the same rate of going, through this sympathetic communication of vibrations; and what is more remarkable, if one clock be set going and the other not, the ticks of the moving clock, transmitted through the wall, will start its neighbor.

It is in consequence of this property that the sound of a particular organ-pipe will sometimes break a particular window-pane, and that a powerful voice can crack a wine-glass by singing near it. The story goes that the Swiss muleteers tie up their bells at certain places, lest the tinkle should bring an avalanche down. Professor Tyndall, however, who, from his Alpine experience, ought to know, does not believe the dreaded catastrophe ever actually occurred.

But the most beautiful instances of sympathy in sound are afforded by the phenomena of musical or sensitive flames. To Professor Leconte, of the United States, belongs the honor of first calling attention to these curiosities. The professor was assisting at a musical party one evening, and he says, "Soon after the music commenced, I observed that the flame of a fish-tail gas-burner exhibited pulsations which were exactly synchronous with the audible beats. This phenomenon was very striking to every one in the room, and especially so when the strong notes of the violoncello came in. It was exceedingly interesting to observe how perfectly even the trills of this instrument were reflected on the sheet of flame. A deaf man might have seen the harmony." By experiment, he found that the vibrations were

not due to the shaking of the walls and floor of the room, but were communicated directly from the music to the flame. This interesting subject has been followed up extensively by Professor Tyndall and Mr. Barrett. It has been found that those flames only are sensitive which are on the point of flaring, or roaring, as some would term it. A common fish-tail burner, just at the point of fluttering, but still giving out a clear sheet of flame, is thrown into a state of commotion, spouting out quivering tongues, when a whistle is blown in its neighborhood. A bat's-wing jet behaves in a similar manner, throwing forth its tongues whenever an anvil is struck with a hammer. Professor Tyndall makes flames almost dance to music. He places a long rod-like flame and a short one side by side; upon blowing a whistle, the long flame becomes short, forked, and brilliant, and the short one long and smoky. The most marvellous flame exhibited at his lecture on this subject was a long thin one, twenty-four inches high. The slightest tap on a distant anvil reduced the height of this flame to seven inches. At the shaking of a bunch of keys it became violently agitated, and emitted a loud roar. The creaking of a boot set it in commotion; so did the crumpling of a piece of paper, or the rustle of a silk dress. The patter of a rain-drop startled it. At every tick of a watch held near it, down it fell. The twitter of a distant sparrow, or the chirp of a cricket, produced the same effect. When Professor Tyndall recited Spenser's verse, commencing, "Her ivory forehead full of bounty beams," the flame seemed to show its appreciation of the language; it noticed some sounds with a slight nod, to others it bowed more distinctly, and to certain others, again, it made a profound obeisance. To the performance of a musical box, the flame behaved like a sentient being. Jets of smoke are acted upon like flames, and so are jets of water, under certain conditions.

The loud noises which caves and rocky enclosures give forth when low sounds are uttered in them are well known. Bunsen has noticed that when one of the steam jets of Iceland breaks out near the mouth of a cavern, a thunder-like sound is produced. When a hollow shell is placed close to the ear, a low, murmuring noise is heard, which little children readily believe is the rolling of the sea. These phenomena are the effects of resonance, and resonance is the reinforcement of one sound by echoes of itself. If we speak into the mouth of a hollow tube the sound vibrations of the air pour down the tube to the bottom; striking against this, they are reflected, and turn back again; on their way back they meet others going down, and, union giving strength, they reinforce each other, and a doubled sound issues from the tube; it may be that several reflections conspire to reinforce the original sound several times, and then for a light whisper we have a loud roar.

The channel of the ear itself is a resonant cavity. Every one is familiar with the experiment of holding a poker by two strings, one in each hand, thrusting the fingers in the ears, and striking the poker against some hard substance. A sound is experienced by this means which is as deep and sonorous as a cathedral bell. It is due to the reinforcement of the vibrations of the poker in the hollow cavity of the ear. When we blow gently across a closed tube, such as the pipe of a key, the gentle fluttering of our breath

is so reinforced by the resonance of the cavity that a whistle is produced. An organ-pipe gives forth its powerful note on the same principle; the prime source of the sound is only a gentle puff of wind blown against a sharp edge; this produces a flutter in the air, and some particular pulse of this fluttering is converted into a musical sound by the resonance of the associated column of air. If a tuning-fork be sounded and held in front of the slit near the bottom of an organ-pipe, the pipe will resound as if it had been blown into. But the pipe and the fork must yield the same note, or the former will not "speak." Any cavity will not fully resound to any sound; it is only when the note the pipe would give if blown into is the same as that given by the fork, that the resonance is perfect.

But while sound will augment sound, the opposite is likewise the case; sound will destroy sound. As this curiosity brings us to silence, it shall be the last mentioned here.

Sound consists in waves or pulses traveling through the air. Now a wave consists of an elevation and a depression. Suppose that two waves come together. If elevation meet elevation they augment each other, and a double elevation is the consequence; if depression meet depression, the effect is similar; we have a depression of double the depth. But if elevation meet depression, what follows? Clearly they destroy each, and the result is nothing. So it follows, that when two sounds meet in such a manner that the elevations of the waves of one meet the depressions of the waves of the other, silence is produced. Just the same thing occurs in the case of light, which is also a wave motion. An optician (we don't mean a spectacle and telescope maker, but a scientific student of optics) can make two rays of light so clash that darkness is the result. In an ordinary tuning-fork the vibrations of one prong do really, to a certain extent, destroy those of the other. Any one may convince himself of this by sounding a fork and then placing a cardboard tube over one prong,—of course without bringing tube and prong into contact. The emitted sound will be stronger than when both prongs were exposed. The actual silencing of one prong by another may thus be heard: sound a fork and hold it to the ear; slowly turn it round, and you will hear the sound continually die out and revive again. The points of silence are easily discovered; they are in the directions of the corners of the prongs. It is here that elevation—of the waves generated by one prong—meets depression—of the waves generated by the other prong. One kills the other, and we have silence.

OLE BULL IN THE WEST.

Since we first announced the arrival of the great Norwegian in this country, some three months since, he has been taken up warmly by the press all over the country; has been received by the people of a dozen cities with positive ovations, and has attracted larger audiences than any artist who has travelled the same route, for years past. The critics, without exception, pronounce him a grander, more refined and more effective performer than when he was last here, a dozen years ago. He has been greeted with torch-light processions, deputations and bouquets, and has, in simple truth, pursued a career of triumph, artistically and financially. On his arrival at Madison, Wis., a company of about

100 torch-bearers, exclusively Norwegians, and including some of the most respected citizens, were drawn up in line on the depot platform, the light and smell of their torches being strongly suggestive of the Milwaukee campaign of 1860. As he alighted from the platform, OLE BULL, evidently much surprised and pleased, uncovered his head and advanced to greet his countrymen, the leaders of the demonstration explaining to him the programme. The barouche sleighs, which had been engaged from Kentzler's, by some mistake were not on hand, and the hero of the occasion was invited to a seat in the omnibus, but preferred to march with his countrymen, who accordingly formed in line, surrounding their guest, and marched up Washington avenue to the music of the City Band, Roman candles and other fire-works being frequently discharged by the way, the sleighs which had been sent for bringing up the rear. The procession marched around the west and north side of the Capitol Square by Carroll, Mifflin, Pinckney and Main streets to the front of the Vilvas House, people in several places coming to the windows of their bed-chambers to see the spectacle, and a number of gentlemen from the balcony of the United States block cheered the procession as it passed by. Arrived at the Vilvas House the procession halted, and Ole Bull, with uncovered head, his gray locks floating in the wind, and his sunny face, so full of good will to men, lit up by the torches of his countrymen who clustered around him, with pleasant voice, like friend familiarly talking to friend, addressed his countrymen in their native tongue.

His concerts here were highly successful, and he was feted by the citizens of the place. Of the effect of his playing, one or two brief extracts from the Western journals will convey some idea:

"Ole Bull then appeared amid prolonged applause, and repeated the splendid *Récitativo* and 'Carnival of Venice,' which he gave the first night, evoking wild applause and an enthusiastic encore, to which he responded, by request, with 'The Mother's Prayer,' in which the violin so wonderfully is made to imitate the human voice and you could almost see the anxious mother before you, wringing her hands and pleading with the Father. As the last notes of the magic instrument melted on the air, there were very few in the audience who did not feel a pang of regret that they should hear those sweet voices no more. Our poor pen is inadequate to any description of the great master's playing."

"The audience were reluctant to disperse, and there were loud calls for Ole Bull, in answer to which he appeared and bowed his thanks, was called out again, again acknowledged the mark of favor and finally joined hands with the other performers, and all advanced to the front of the stage, and bowing low, thus expressed their thanks for the favor shown them. Sheriff Main then called for three cheers for Ole Bull, which were given with a hearty good will, and the crowd slowly left."

Another writer says:

"We believe Ole Bull has performed and is still capable of performing greater feats on the violin than ever Paganini did. Those glassy harmonic sounds for which Paganini was so famous, and which it is said Duranowski invented, have been made time and again by the great Norwegian, and that too with the most startling effect imaginable.

We had an august sample of his splendid talents in this particular in his rendition of the 'Adagio Expressivo Rondo Campanella' last evening. This celebrated piece was composed by Paganini, but Ole Bull's performance was so masterly and so wonderfully grand that if his great instructor could have heard it he would have undoubtedly accorded him the highest palm of excellence. We do not believe Ole Bull could play anything whatever without improving the original composition. Indeed, we will go further, and say that it is wholly impossible for him to play anything without recreating it—without making it peculiarly his own.

"But Ole Bull's genius shines out in its fullest splendor when he plays pieces of his own composition. His Mother's Prayer has been termed his greatest creation as well as his greatest performance. It is, however, difficult to decide among so many masterly productions which particular one should have the preference. The first note in the 'Mother's Prayer' seemed to unlock the casket of memory, and whisper to us in accents of sweetest harmony of by-gone days, of joys and sorrows, never to return again on earth.

"We never heard a more exquisite production, nor a more artistic one. It was, indeed, a sublime idealization of a sainted mother's prayer ascending on the wings of love to the home of the blest. What a sweet, and tender, and gentle, and calm, and heavenly influence it seemed to breathe o'er the common mortals of earth. From the beginning to the end the attention of the audience was chained. A pin could have been heard to drop during its rendition. The breath of life seemed temporarily suspended. When the great musician played the 'Sciliano' and 'Tarantella,' the audience was wrought up to the highest pitch of enthusiastic delight. He was obliged to appear again upon the stage to calm the tumultuous applause."

The enthusiasm which Ole Bull excites in his hearers everywhere, is, however, a more positive evidence of the electric power of his performance than all the criticisms that could be written, and is a key to the extraordinary success which everywhere follows him.

Ole Bull will, we believe, appear in Washington next week, and will probably appear in New York early in April.

Madame Varian Hoffman, the soprano of Ole Bull's concerts, receives a large share of the encomiums of the press, and meets with marked success with the public. One paper says: "Madame Varian, with a clear, flexible, sweet voice, most charmingly gave the 'French Laughing Song,' better even than the first night, and to a very emphatic *encore* twice repeated, gave the dearest and most tender of songs, 'Annie Laurie,' more to our taste than we ever heard it."

CORRESPONDENCE.

BALTIMORE, Feb. 18th, 1868.

MESSRS. EDITORS: This has probably been one of the most noticeable musical seasons of which Baltimore can boast since the days of Lind, Sontag, Bosio, Thalberg, Vieux-Temps, *et al.* A continuous succession of sweet strains, vocal and instrumental, have delighted the ears and appealed to the sensibilities of our musical public, which confessedly, in sharp critical judgment and earnest appreciation of the beautiful in art,

as well as in nature, can be excelled by none, not even by the denizens of the self-styled "Hub of the Universe," Boston. Most of those who frequent operas and concerts here are persons of extensive experience, who have visited the best musical assemblies of Europe, have heard the greatest celebrities both of this and the Old World, and possess a refinement of taste which gives force to their opinions. With this prelude, I will enter into a brief detail of one of the musical events of the season.

The first notability worthy of mention is Miss Jenny Busk, whose talents early excited attention amongst her friends here, where she was born, and induced her to go to Europe to complete her education. This she effected most perfectly, and with an assiduity and conscientiousness worthy of the highest praise. Her remarkable extent of voice, her admirable musical conception, her extraordinary aptitude, her wonderful *fiorture*, and her immense vocal ability, joined to natural gifts of the highest order, created both in this city and in Washington a furore which few artistes have ever succeeded in exciting. The brilliancy of her execution in *bravura* passages was only exceeded by the delicious beauty and sympathetic quality of her intonation in those charming ballads which she gave with such true shading and just expression as to excite spontaneous and tumultuous applause. It is doubtful whether any *debutante* was ever received with such genuine and hearty manifestations of esteem or more entirely merited them. One of her specialties is the taking of F in alt, a note which caused Jenny Lind's fine organ to tremble, and which even the great Malibran more frequently refused than essayed. In the highly successful Concerts which Miss Busk gave, M. Poznanski, the Violinist, bore a very conspicuous part, and rendered his fair companion most acceptable aid in diversifying the entertainments. His school will compare with that of Vieux-Temps and Sivori, and in elegance and originality of expression, he certainly exceeds that old favorite, Ole Bull. There is a steadiness about his playing, a comprehension of his author, an imaginative power and executive ability which are rarely found combined in any one person. These qualities were particularly noticeable in his peculiarly admirable rendition of Paganini's "Carnival de Venice" in which he made many new and effective points. He will always be heard here with infinite pleasure. His harmonics were especially admired.

After Miss Busk, we had Strakosch's Italian Opera, at the Concordia, which did extremely well and gave great satisfaction. *En passant*, I may remark that this Opera House is rapidly growing into favor. Mr. Ernest Knabe, the great piano-forte manufacturer, is President, and Major Hess Vice-President, and under their energetic efforts, aided by a wise direction, many desirable improvements have been made in the original structure. The vomitories have been increased and enlarged, the auditorium so improved as to make it one of the most comfortable as it is doubtless one of the best embellished in the country, and it is now in contemplation to increase the stage room, which is all that is needed to make it the best theatre in Baltimore. Its situation, near the lines of railway and several of our principal hotels, give also additional advantages. But I digress.

Succeeding Strakosch, next came Bate-